Ohio Agricultural Experiment Station

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SOIL TREATMENT OF TOBACCO PLANT BEDS.

FALL APPLICATIONS OF FORMALIN TO PREVENT BED ROT (*Rhizoctonia*) AND BLACK ROOT (*Thielavia*).

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Last spring the writer inaugurated some small experiments to test the effect of solutions of formalin (40 percent formaldehyde) in water, as a drench upon old tobacco beds to destroy the bed rot *Rhizoctonia*. In this work a strength of 1½ pints formalin to 50 gallons of water was employed, and the applications were made just before sowing the seed. This caused delay in seeding the plant beds, as the formalin must be allowed to evaporate before the seed is sown, and was somewhat disadvantageous.

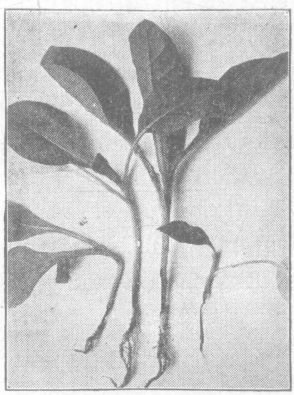

FIG. I. Tobacco plants showing bed rot (*Rhizoctonia.*) Reduced.
(*From photograph by F. M. Van Hook.*)

The results were doubtful in some cases, and decidedly favorable in certain old, badly infested beds at Germantown. In one instance the difference between the treated and untreated portions of the bed was very decided, amounting to a very great saving in plants, estimated as about 4 times as much bed rot in the untreated as in the treated part of these old beds. Other instances gave apparent gains of a less marked character. In treated beds at Wooster the common damping off fungus of greenhouse plant beds (*Pythium*), occurred to a limited extent but not the bed rot (*Rhizoctonia*).

Owing to the water filled condition of the plant bed soil in early spring the results are possibly as favorable as could be expected, since the efficiency of the formalin drench has been thoroughly proved on greenhouse lettuce upon the rosette (*Rhizoctonia*) infesting them. To overcome the disadvantages of the spring applications, is now the object. It is believed that fall applications of a stronger formalin solution will be desirable.

SOIL STEAMING AND FORMALIN DRENCH.

While steaming the soil, as described for greenhouse beds in our Circular No. 57, will probably be effective upon tobacco beds, few growers are so situated as to practice the steaming without first securing a steam boiler and bed pipes for that purpose.

It is more convenient to apply the formalin solution, since only a sprinkling pot (with rose) will be needed in addition to the chemical. The formalin (40 percent formaldehyde) may be obtained of local or wholesale druggists, and in carboys of 100 pounds, may be purchased at a cost of 12 to 15 cents per pound, f. o. b., with added charge for container. In smaller lots the cost is much higher. Growers may arrange to purchase in carboys.

The Experiment Station will endeavor to test the strength of formalin purchased for this purpose, if two ounce samples are submitted to it at Wooster. The solution should be of a strength of 2 pounds, or pints of formalin to 50 gallons of water, or even a little stronger. The stronger may be made 2½ pounds to 50 gallons of water, with thorough stirring in all cases after adding the formalin.

Before applying the solution, the beds should be fairly moist and friable, or made so by watering, and spaded up to the usual depth with the incorporation of any fertilizer of the nature of manure, before drenching. Mineral fertilizers may be applied in spring.

The bed thus prepared and raked over is drenched with the solution at the rate of 1 gallon to each square foot of surface; a bed 50 feet long and 6 feet wide would accordingly require 300 gallons of the solution and use 12 to 15 pounds of formalin in its preparation. So heavy an application will need to be applied at intervals of a few hours so that the liquid is equally absorbed by all parts of the bed soil. After treatment, which should be made before freezing weather begins, the beds are to be left without disturbance until spring, when prepared for seeding.

A thorough trial of this method of treating old and badly diseased tobacco beds, is recommended. It should result in keeping down bed rot and damping off as well as black root in the plant beds. The latter disease may at any time become as widespread as the others, since it is already in portions of Ohio, and was very prevalent in Connecticut the past spring.

The Experiment Station Botanist will gladly render any further assistance he is able to give, upon application by letter.